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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/787,204	02/27/2004	Toshihisa Nozawa	09459.0001	4678

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EXAMINER

DHINGRA, RAKESH KUMAR

ART UNIT PAPER NUMBER

1763

DATE MAILED: 10/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/787,204

Applicant(s)

NOZAWA ET AL.

Examiner

Rakesh K. Dhingra

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 February 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 02/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 4, 5, 10 are rejected under 35 U.S.C. 102(e) as being anticipated by

Rossman (US PGPub. No. 2003/0211735).

Regarding Claim 1: Rossman teaches a substrate processing apparatus (Figures 6, 7A) comprising:

a process chamber 113 in which a substrate 117 is plasma-processed;

a gas introducing mechanism 133 configured to introduce gas into said process chamber;

a first exhaust path (mechanism) 72 having a first exhaust port provided at a first position in said process chamber, and configured to exhaust the inside of said process chamber when gas for plasma 10 processing is introduced into said process chamber by said gas introducing mechanism to plasma-process the substrate;

a second exhaust path (mechanism) 70 having a second exhaust port provided at a second position in said process chamber, and configured to exhaust the inside of said process chamber when gas for cleaning is introduced into said process chamber by said gas introducing mechanism to clean the inside of said process chamber. Though Figure 6 shows both the exhaust paths connected to chamber at the same level, the

location (height) of exhaust ports could be varied as per process limitations (Paragraphs 0031, 0038, 0049, 0054).

Regarding Claim 4: Rossman teaches that system controller 160 and computer program 163 dictate the gas flows and other parameters of a particular process (Paragraph 0057).

Regarding Claims 5, 10: Rossman teaches that the apparatus (Figure 7A) comprises a microwave generator 151 configured to generate a microwave for plasma processing of the substrate, wherein reactive gas is used as the gas for cleaning, and wherein said microwave generator generates the microwave also when the inside of said process chamber is cleaned (Paragraph 0054).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action: ✓

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2, 3, 6-9, 11-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rossman (US PGPub. No. 2003/0211735) in view of Takahashi (US Patent No. 5,520,743).

Regarding Claims 2, 3, 11, 12: Rossman teaches all limitations of the claim (as explained above) except a hoisting/lowering mechanism for holding mechanism and relative heights of exhaust mechanism with respect to wafer holding mechanism.

Takahashi teaches an apparatus (Figure 3) that has a mount 18 for holding wafer W. Takahashi further teaches two exhaust mechanisms wherein the first exhaust port 33 is positioned higher than the second exhaust port 45 that is positioned lower than said holding mechanism 18. Takahashi further teaches a lift mechanism 91 that is used to lower the middle lid 19 (includes mount 18) to facilitate opening of gate valve 43 for entry /exit of wafer into the process chamber. Thus height of mount (wafer holding mechanism) 18 could be varied with respect to first exhaust port 33 as per process limitations (Figure 3 and Column 3, line 38 to Column 4, line 39).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use wafer holding mechanism configured in the process chamber as taught by Takahashi in the apparatus of Rossman to enable removal of impurities from the wafer surface (Column 1, lines 44-47).

In this regard it has been ruled by Courts (Case law):

“Rearrangement of parts was held to have been obvious. *In re Japikse* 86 USPQ 70 (CCPA 1950).”

“The motivation to make a specific structure is always related to the properties or uses one skilled in the art would expect the structure to have. *In re Newell* 13 USPQ 2d 1248, 1250 (Fed. Cir. 1989); *Fromson v. Advance Offset Plate* 225 USPQ 26, 31 (Fed. Cir. 1985); *In re Gyurik* 201 USPQ 552, 557 (CCPA 1979).”

Regarding Claims 6, 8,13,15: Rossman teaches that system controller 160 and computer program 163 dictate the gas flows and other parameters (includes operation of exhaust mechanisms) of a particular process (Paragraph 0057).

Regarding Claims 7, 9, 14, 16-18: Rossman teaches that the apparatus (Figure 7A) comprises a microwave generator 151 configured to generate a microwave for plasma processing of the substrate, wherein reactive gas is used as the gas for cleaning, and wherein said microwave generator generates the microwave also when the inside of said process chamber is cleaned (Paragraph 0054).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Kaneko et al (US Patent No. 5,223,113) teach an apparatus (Figure 2) that has a process chamber 100 with a first exhaust pipe 34 and a second exhaust pipe 36 (Column 5, lines 1-5).

Nozawa et al (US Patent No. 5,234,527) teach an apparatus (Figure 1) that has a process chamber 1 with a first exhaust port 23 and a second exhaust port 24 (Column 5, lines 1-5).

Komino et al (US patent No. 6,156,151) teach an apparatus 100 (Figure 1) that has An upper exhaust chamber 103, a lower exhaust chamber 105 and a movable susceptor 114 (Column 3, lines 60-68 and Column 5, lines 15-30).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rakesh K. Dhingra whose telephone number is (571)-272-5959. The examiner can normally be reached on 8:30 -6:00 (Monday - Friday).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571)-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Rakesh Dhingra



Parviz Hassanzadeh
Supervisory Patent Examiner
Art Unit 1763